

Committee on Resources

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**Testimony: Brian J. Rothschild
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My name is Brian J. Rothschild. I am the Policy Advisor to the Mayor of New Bedford and the Dean of the School for Marine Science and Technology. I have been active in fisheries science and management for over fifty years; and I have worked on fisheries problems in the Central Pacific, North Pacific and Alaska; Gulf of Mexico, the North Atlantic, and the Chesapeake Bay. I was Deputy Director of the Northwest and Alaska Fisheries Center, Director of the Southwest Fisheries Center, and Director of the Office of Policy and Planning in NMFS. I was responsible for the National implementation of the Magnuson-Stevens Act, reporting directly to NOAA's first Administrator, Robert M. White. I am the author or editor of eight books on fisheries and oceanography, and the author of about ninety scientific publications.

Federal Fisheries Management under extended jurisdiction has been with us since 1976. There have been many successes. At the same time, there have been recurrent problems. I believe that the Pombo Bill takes the recurrent problems into account and provides reasonable solutions. The Bill strengthens fishery management by allowing more flexibility to managers and suppressing scientifically unsupported assertions in the language of the existing statute. Mr. Pombo and Mr. Frank have to be congratulated.

Not everyone will share my view. Fisheries management continues to reflect a struggle in ideologies and values. On one hand, there are those who feel that the amendments offered by Mr. Frank and Mr. Pombo water down the directives of the Magnuson-Stevens Act. On the other hand, there are those that feel the economic and social fabric of fishing communities is more important. Curiously, both sides generally agree that the conservation of the fish stocks is paramount.

At its outset the initiation of good public policy dictates that legislation should be based on the facts. If legislation is based on faulty or difficult to define premises, then implementation of the legislation is constrained to be arbitrary and lack social good. If we focus on reasonable scientifically acceptable premises, then we can apply genuine effort to increasing our knowledge so that we can make better decisions.

Some of the great unknowns include the causes of fish stock fluctuations. The causes of fish stock fluctuations are very complex. It isn't true that every decline in a stock is caused by overfishing and every increase in stock abundance is a management success. Because time series of stock abundance are so short, we generally do not know whether an observed decline is truly a decline or simply a return to the stock's normal level of abundance. We do not know whether some environmental factor such as temperature or the management of some associated species has affected stock abundance. Our lack of understanding of stock fluctuations leads us to the unsupported assertion that if we just stop fishing, the stock will increase and that the trajectory of this increase is well known. This is related to the assumption used in management in New England, which is that if we just reduced fishing that all stocks can be brought to their historical maximum simultaneously—a notion not supported by ecological theory.

Fishery managers often assume that habitat is the bottom, but most scientists would agree that the most important habitat controlling stock abundance is not the bottom but the water column. We have in New England one of the most significant habitat experiments in the world, where 30 percent of Georges Bank has been closed, concentrating fishing into 60 percent of its former area, yet we do not know the effect of this grand experiment.

Focusing on the issue in more detail, our preoccupation with preventing overfishing is curious. One would think that a concept that is deemed to be so important would have a unique and unambiguous scientific definition. This is not the case. There are multiple definitions. For example, growth overfishing has little

conservation impact, while stock overfishing has a significant conservation impact. The problem is growth overfishing can be determined immediately, but stock overfishing requires an examination of a long time series of data that may not be available; and in any event, it is difficult to determine whether a contemporaneous data point represents or does not represent overfishing.

Just to exemplify the difficulty, consider a common overfishing definition: "a fishery is overfished if it is at or below a level that jeopardized the capacity of the fishery to produce maximum sustained yield on a continuing basis. What is "maximum sustained yield on a continuing basis" supposed to mean? What is the difference between continuing and sustained? What is jeopardized supposed to mean? How do we tell whether the stock is at or below a particular level? Is this based on a single year of observations, five years, or ten years?

All of these observations made above are very well known to the scientific community. While we have acquired a tremendous amount of information on fish stocks, their response to the environment and fishing, the areas identified above relate to substantial gaps in knowledge.

When these issues of ignorance are raised, we are often given the pat answer that a lack of knowledge should not be taken as an excuse not to make a decision. This is generally true. On the other hand, a lack of knowledge should not be taken to mean that we should take the most conservative or precautionary approach. It is not rational to take the most conservative approach. A classic problem in decision theory involves a starving individual who needs to cross a very busy street to reach a restaurant. The risk-prone individual closes his eyes and runs across the street and is killed by speeding traffic. The risk-adverse individual never crosses the street being afraid of the traffic; this individual eventually starves to death. The rational person, the risk-neutral person, will look both ways, safely cross the street, get something to eat, and live a long and happy life.

When we are in the area of the unknown, which we are in many aspects of fishery management, we have to rely more on the judgment of individuals than on naked mathematical models. It was, in fact, the intent of congress in the mid 1970s that the judgment of knowledgeable individuals would be used to make management decisions guided by the National Standards of the FCMA. At that time, computers and computer techniques were not nearly as available as they are now. As the computer became more and more available, councils have relied more and more on computer output to make decisions. However, understanding and knowledge have not increased proportionately, so the information content, and as a consequence the utility of decisions, have not improved.

As I said above, I like the Pombo Bill because it provides more flexibility to managers. It implicitly recognizes the imperfection of scientific data and allocates more decision-making accountability to managers, requiring them at the same time to take account of scientific findings.

I visualize some adjustments and technical corrections.

I would like to see a better system of checks-and-balances in fisheries management. At the present time, the checks-and-balances involve litigation; and these are often constrained to process, making it difficult to deal with matters of significant substance. The checks-and-balances that are implicit in the amendment involve peer reviews at several levels. However, the peer-review process places the accountability system in the hands of individuals who are really not accountable. The present mechanism is further faulty because public input is perfunctory. This is because even small adjustments to fishery management regulations may be associated with thousands of pages of highly technical documentation that even a trained individual cannot easily grasp. To rectify the lack of checks-and-balances in the fishery management system and to rectify shortfalls and problems in implementation, I recommend we create an agency, possibly within NOAA, to serve as an independent ombudsman, to oversee and to make recommendations on contentious and strategic issues relevant to fisheries management. Such an arrangement could be modeled after the interrelationship between the Federal Aviation Agency and the National Transportation Safety Board. In fact, the issue of organization needs to be taken further, never having been addressed since the advent of the FCMA in 1976. The agency needs to organize into 1) a regulatory entity, and 2) a research and data acquisition and archiving entity.

Strengthening aspects of the Pombo Bill would parallel these institutional changes. For example, there needs to be an adequately funded, centrally maintained national center for fishery data. Research activities, such as defining ecosystem management; deriving a better understanding of ocean-fish interactions and the cause of fish stock fluctuations; and gear research, require massive support if they are to contribute in a

feasible way to improving fishery management. The Act should require major planning studies for each of these areas. The act should require a plan for a new organizational focus within NMFS that gives the NMFS the capability to better discharge the mandate that it has been given by congress. It is generally agreed that well-trained individuals are not available to support the needs of fishery management, and it is for this reason that Mr. Frank's amendments on education are important.

Increased flexibility and an oversight agency will certainly contribute to improving fishery management.

I thank the committee for giving me the opportunity to share my views with you.